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Inverse regulation of the ADAM-family members, decysin and MADDAM/ADAM19 during monocyte differentiation.

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Two members of the ADAM (a disintegrin and metalloprotease)-family, MADDAM and decysin, were described as dendritic cell (DC) maturation markers. We are interested in monocyte differentiation and investigated in particular the expression pattern of both genes during the differentiation of human monocytes into DC and macrophages (MAC). Both genes are weakly expressed in freshly isolated monocytes. In immature DC decysin mRNA was absent, even after induction of the terminal differentiation of DC by CD40L or tumour necrosis factor-alpha (TNF-alpha). Only in DC maturated by lipopolysaccharide (LPS) strong signals of decysin mRNA were detected. However, MADDAM mRNA was expressed in immature DC and the expression was markedly increased after induction of the terminal DC differentiation by various stimuli. In contrast, MAC showed a high constitutive decysin mRNA expression, but expressed no MADDAM mRNA. On protein level similar results of MADDAM expression were obtained. Stimulation of MAC by LPS did not induce MADDAM mRNA expression, while decysin mRNA expression was strongly increased. Further investigations revealed that the well-known inducer of MAC differentiation, 1alpha,25-dihydroxyvitamin D3 up-regulated decysin mRNA expression during the differentiation of primary monocytes and myelomonocytic THP-1 cells into MAC. In vivo decysin mRNA expression was only detected in human colon, but not in other tissues we examined. Accordingly, isolated intestinal MAC expressed decysin mRNA. In conclusion, decysin and MADDAM mRNA expression were regulated in an opposite way during monocyte differentiation: MADDAM mRNA and protein was mainly detected in DC, whereas decysin mRNA expression was mainly found in MAC. Therefore only MADDAM, but not decysin is a suitable marker for human monocyte-derived DC.

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